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Operating Instructions School Balance

KERN EMB

Version 2.4
10/2006
GB

EMB-BA-e-0624

GB

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Operating Instructions

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1 Technical data

KERN	EMB200-2	EMB600-2	EMB220-1	EMB500-1
Readout	0,01 g	0,01 g	0,1 g	0,1 g
Weighing range	200 g	600 g	220 g	500 g
Reproducibility	0,01 g	0,01 g	0,1 g	0,1 g
Linearity	± 0,02 g	± 0,03 g	± 0,2 g	± 0,3 g
Adjusting weight (not included)	100g (F2)	500g (F2)	200 g (M1)	200g (M1)
Stabilization time	2-3 sec.			
AUTO-OFF-Function (in battery mode)	after 3 min.			
Units	g / oz / ozt / dwt			
Operating temperature	0° C .... + 40° C			
Air humidity	max. 80 % (non-condensing)			
Case (W x D x H) mm	170x240x39			
Weighing plate mm	Ø 105		Ø 150	
Battery supply (standard)	1 x 9 V		AA(2x 1,5V)	9V
Mains adapter (optional)	300 mA / 9V			
Underfloor weighing	Hanging loop below the cover plate as standard			

KERN	EMB1200-1	EMB2200-0	EMB5.2K1	EMB5.2K5
Readout	0,1 g	1 g	1 g	5 g
Weighing range	1.200 g	2.200 g	5.200 g	5.200 g
Reproducibility	0,1 g	1 g	1 g	5 g
Linearity	± 0,3 g	± 2 g	± 3 g	± 10 g
Adjusting weight (not included)	500 g (M1)	1.000 g (M1)	2.000 g (M1)	2.000g (M1)
Stabilization time	2-3 sec.			
AUTO-OFF-Function (in battery mode)	after 3 min.			
Units	g / oz / ozt / dwt			
Operating temperature	0° C .... + 40° C			
Air humidity	max. 80 % (non-condensing)			
Case (W x D x H) mm	170x240x39			
Weighing plate mm	Ø 150			
Battery supply (standard)	9V	AA (2x 1,5V)	9V	AA (2x 1,5 V)
Mains adapter (optional)	300 mA / 9V			
Underfloor weighing	Hanging loop below the cover plate as standard			

2 Declaration of conformty

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Konformitätserklärung

Declaration of conformity for apparatus with CE mark
Konformitätserklärung für Geräte mit CE-Zeichen
Déclaration de conformité pour appareils portant la marque CE
Declaración de conformidad para aparatos con disitintivo CE
Dichiarazione di cofnromitá per apparecchi contrassegnati con la marcatura CE

English We hereby declare that the product to which this declaration refers conforms with the following standards.

Deutsch Wir erklären hiermit, dass das Produkt, auf das sich diese Erklärung bezieht, mit den nachstehenden Normen übereinstimmt.

Français Nous déclarons avec cela responsabilité que le produit, auquel se rapporte la présente déclaration, est conforme aux normes citées ci-après.

Español Manifestamos en la presente que el producto al que se refiere esta declaración est´´a de acuerdo con las normas siguientes

Italiano Dichiariamo con ciò che il prodotto al quale la presente dichiarazione si riferisce è conforme alle norme di seguito citate.

Electronic Balances: KERN EMB

Mark applied	EU Directive	Standards
CE	89/336EEC EMC	EN 61000-6-3 : 2001 EN 61000-3-2 : 2000 EN 61000-3-3 : 1995+A1 : 2001 EN 61000-6-1 : 2001

Date: 15.11.2005

Signature:

Gottl. KERN & Sohn GmbH
Management

3 Fundamental information (general)

3.1 Intended use

The balance you have acquired serves to determine the weighing value of the material to be weighed. It is intended to be used as a “non-automatic“ balance, i.e. the material to be weighed is manually and carefully placed in the centre of the weighing plate. The weighing value can be read off after a stable weighing value has been obtained.

3.2 Inappropriate use

Do not use the balance for dynamic weighing. In the event that small quantities are removed or added to the material to be weighed, incorrect weighing results can be displayed due to the “stability compensation“ in the balance. (Example: Slowly draining fluids from a container on the balance.)
Do not leave a permanent load on the weighing plate. This can damage the measuring equipment.
Be sure to avoid impact shock and overloading the balance in excess of the prescribed maximum load rating (max.), minus any possible tare weight that is already present. This could cause damage to the balance.
Never operate the balance in hazardous locations. The series design is not explosion-proof.
Structural alterations may not be made to the balance. This can lead to incorrect weighing results, faults concerning safety regulations as well as to destruction of the balance.
The balance may only be used in compliance with the described guidelines. Varying areas of application/planned use must be approved by KERN in writing.

3.3 Guarantee

The guarantee is not valid following
- non-observation of our guidelines in the operating instructions
- use outside the described applications
- alteration to or opening of the device
- mechanical damage and damage caused by media, liquids
- natural wear and tear
- inappropriate erection or electric installation
- overloading of the measuring equipment

3.4 Monitoring the test substances

The metrology features of the balance and any possible available adjusting weight must be checked at regular intervals within the scope of quality assurance. For this purpose, the answerable user must define a suitable interval as well as the nature and scope of this check. Information is available on KERN’s home page (www.kern-sohn.com) with regard to the monitoring of balance test substances and the test weights required for this. Test weights and balances can be adjusted quickly and at a reasonable price in KERN’s accredited DKD calibration laboratory (return to national normal).

4 Fundamental safety information

4.1 Observe the information in the operating instructions

Please read the operating instructions carefully before erecting and commissioning, even if you already have experience with KERN balances.

4.2 Staff training

The device may only be operated and looked after by trained members of staff.

5 Transport and storage

5.1 Acceptance check

Please check the packaging immediately upon delivery and the device during unpacking for any visible signs of external damage.

5.2 Packaging

Please retain all parts of the original packaging in case it should be necessary to return items at any time.
Only the original packaging should be used for return consignments.
Before despatch, disconnect all attached cables and loose/movable parts.
Secure all parts, e.g. power unit etc., to prevent slipping and damage.

6 Unpacking, installation and commissioning

6.1 Place of installation, place of use

The balance is constructed in such a way that reliable weighing results can be achieved under normal application conditions.
By selecting the correct location for your balance, you will be able to work quickly and precisely.

Therefore please observe the following at the place of installation:

- Place the balance on a firm, level surface;
- Avoid extreme heat as well as temperature fluctuation caused by installing next to a radiator or in the direct sunlight;
- Protect the balance against direct draughts due to open windows and doors;
- Avoid jarring during weighing;
- Protect the balance against high humidity, vapours and dust;
- Do not expose the device to extreme dampness for longer periods of time. Inadmissible bedewing (condensation of air moisture on the device) can occur if a cold device is taken into a significantly warmer environment. In this case, please acclimatise the device for approx. 2 hours at room temperature after it has been disconnected from the mains.
- Avoid static charging of the material to be weighed, weighing container and windshield.

Major display deviations (incorrect weighing results) are possible if electromagnetic fields occur as well as due to static charging, currents and instable power supply. It is then necessary to change the location.

6.2 Unpacking

Carefully remove the balance from its packaging, remove the plastic wrapping and position the balance in its intended working location.

6.2.1 Installation

Install the balance in such a fashion that the weighing plate is absolutely horizonta

6.2.2 List of items supplied

Standard accessories:

KERN EMB
• *Balance* • *Operating manual* • *Batteries (2 x 1,5 V) or 1 x 9 V*

6.3 Battery Operation

Remove the battery cover from the bottom of the balance. Connect 2 x 1,5V or 1x 9V batteries (EMB 200-2/EMB600-2 Block-Battery 9 V). Re-insert the battery cover.
Battery conservation through automatic power-off 3 minutes after ending a weighing operation.
When the battery power is used up the display will show "**LO**". Press the OFF key and change the batteries at once.
When the balance is not in use for a longer period of time remove batteries and keep them separately. Leakage of battery liquid might damage the balance.

6.4 Mains supply

Electric power supply is by means of the external mains supply circuit. The printed voltage level must comply with the local voltage.
Only use original KERN mains supply circuits. The use of other makes is subject to approval by Kern.

6.5 Initial start-up

A warm-up time of 3 minutes stabilises the measured values after switching on.

The accuracy of the balance depends on the local acceleration of the fall.
Please be sure to observe the information in the chapter on adjusting.

6.6 Adjustment

As the acceleration value due to gravity is not the same at every location on earth, each balance must be coordinated – in compliance with the underlying physical weighing principle - to the existing acceleration due to gravity at its place of location (only if the balance has not already been adjusted to the location in the factory). This adjustment process must be carried out during the initial start-up, after change in location and variation of surrounding temperature. It is also recommendable to adjust the balance periodically during weighing operation in order to obtain exact measured values.

6.6.1 Adjusting

Using a precision weight, the accuracy of the balance can be checked at any time and adjusted.

Adjustment procedure:

Check that the surrounding conditions are stable.
A short warm-up time of about 3 minutes is recommended for stabilisation.

- Use the ON TARE key to switch the balance on.
- Press the OFF key and hold depressed for approx. 10 seconds until "**CAL**" appears on the display.
- Release the OFF key; the size of the calibration weight is shown on the display (see chapter 1, Technical Data).
- Now place the calibration weight in the centre of the weighing plate.
- "**F**" will appear for a brief period of time before the balance switches off.
- Remove the calibration weight. Calibration is completed.

In case of an adjusting error or a wrong adjusting weight **"E"** will appear. Repeat the adjusting procedure.
Keep the adjusting weight near the balance. Daily verification of the balance accuracy is recommended for quality assured applications.

6.7 Underfloor weighing

Objects which, because of their size or shape, cannot be put on the scale, can be weighed by means of underfloor weighing.

Proceed as follows:

- Switch off the balance.
- Turn the balance over.
- Open the cover plate (1) on the base of the balance.
- Hang on the hook for underfloor weighing (2).
- Place the balance over an opening.
- Hang the item to be weighed on the hook and carry out weighing.

Fig. 1: Setting up the balance for underfloor weighings

CAUTION

- **For the underfloor weighing use only the original hook of KERN.**
- **Take care that all hanged items are stable enough to hold the goods which you wish to weigh (!!Danger of breaking!!).**
- **Never hang goods more than the maximum permitted weight (!!Danger of breaking!!).**

Always make sure that there are no living beings or materials below the load that could be injured or damaged.

NOTE

After completing the underfloor weighing, the opening in the floor of the balance must be closed again (dust protection).

7 Operation

7.1 Overview of the keypad

Key	Pressed briefly	Pressed for 10 sec
	Switching the balance on Tara-Function	Unit changing
	Switching the balance off	Adjusting function

7.2 Operating instructions

7.2.1 Weighing

- The balance is switched on by pressing the ON TARE key.
- The balance performs auto-diagnostics (for 2 s) and then displays **"0"**.
- If the weighing object is heavier than the weighing range the display indicates **"E"** (=Overload).
- The balance is switched off by pressing the OFF key once.

7.2.2 Taring

- Place tare cup on the weighing plate and press ON TARE key. The weighing indication changes now to **"0"**.The weight of the cup is now memorised.
- Fill weighing object in the cup, read measuring value.
- By pressing ON TARE key, after the terminated weighing operation **"0"** appears again in the display.

The taring procedure can be repeated several times, for instance to produce a mixture of several components.

The limit is reached when the total weighing range has been used.

After removal of the tare cup the total weight appears as a negative value with „-„ mark.

7.2.3 Units

Different foreign weighing units are integrated into the various balance models .

Change the Units with the ON/TARE key.

Press an hold the ON/TARE key , few seconds later change the unit.

	Display	***Conversion factor 1 g =***
Gramm	**g**	**1.**
Unze	oz	0.035273962
Troy Unze	ozt	0.032150747
Pennyweight	dwt	0.643014931

7.2.4 Dosage und Zero-tracking

When the Auto-Zero-function is activated, any slight changes of the zero readout are automatically tared.
In the event that small quantities are removed or added to the material to be weighed, incorrect weighing results can be displayed due to the “stability compensation“ in the balance. (Example: Slowly draining fluids from a container on the balance.)
Having dosages with slight changes of weight it is recommended to deactivate this function.

With switched off **Zero-Tracking** the display however is more unstably.

Activate/deactivate Zero-Tracking

⇨ When the balance is switched off, press the **OFF** -key and keep it pressed

⇨ Do not release the **OFF** -key. Press also the **ON/TARE**-key and keep it pressed

⇨ Keep the **ON/TARE**-key pressed, however release the **OFF** -key

⇨ Press **OFF** -key anew

⇨ Keep both keys pressed until in the display “**tr**” appears

⇨ Release both keys. The balance is situated in the menu.

⇨ Press the **ON/TARE**-key until „**tr**“ appears

⇨ Confirm with the **OFF** key

⇨ Press the **ON/TARE**key to switch among the settings:

Display	Mode
„tr“ ON	Auto-Zero on
„tr“ OFF	Auto-Zero off

⇨ Confirm with the **OFF** key. Wait until the balance automatically returns to weighing mode

7.2.5 AUTO-OFF function

For battery operation the balance has an automatic switch off function which can be activated and deactivated in the menu.
Please follow the below instruction for the setting:

⇨ When the balance is switched off, press the **OFF** -key and keep it pressed

⇨ Do not release the **OFF** -key. Press also the **ON/TARE**-key and keep it pressed

⇨ Keep the **ON/TARE**-key pressed, however release the **OFF** -key

⇨ Press **OFF** -key anew

⇨ Keep both keys pressed until in the display “**tr**” appears

⇨ Release both keys. The balance is situated in the menu.

⇨ Press the **ON/TARE**-key until „**AF**“ appears

⇨ Confirm with the **OFF** key

⇨ Press the **ON/TARE**key to switch among the settings:

Display	Mode
„AF“ ON	Battery conservation through automatic power-off 3 minutes after ending a weighing operation.
„AF“ OFF	AUTO-OFF function deactivated.

⇨ Confirm with the **OFF** key. Wait until the balance automatically returns to weighing mode

7.2.6 Reset function

Factory setting reset.

⇨ When the balance is switched off, press the **OFF** -key and keep it pressed

⇨ Do not release the **OFF** -key. Press also the **ON/TARE**-key and keep it pressed

⇨ Keep the **ON/TARE**-key pressed, however release the **OFF** -key

⇨ Press **OFF** -key anew

⇨ Keep both keys pressed until in the display "**tr**" appears

⇨ Release both keys. The balance is situated in the menu.

⇨ Press the **ON/TARE**-key until „**rSt**" appears

⇨ Confirm with the **OFF** key

⇨ Press the **ON/TARE**key to switch among the settings:

Display	**Mode**
„rst" YES	Factory setting reset
„rst" NO	No factory setting reset

⇨ Confirm with the **OFF** key. Wait until the balance automatically returns to weighing mode

8 Maintenance, upkeep, disposal

8.1 Cleaning

Please disconnect the device from the operating voltage before cleaning.

Only use a cloth dampened with mild suds and not aggressive cleaning agents (solvents or similar). Please ensure that fluids are not able to get into the device and rub off using a clean, soft cloth.
Loose sample residue/powder can be removed carefully using a brush or hand vacuum cleaner.
Remove any spilt material to be weighed immediately.

8.2 Maintenance, upkeep

The device may only be opened by trained service engineers authorised by KERN.
Disconnect from the mains supply before opening.

8.3 Disposal

The operating company shall dispose of the packaging and the device in compliance with the valid national or regional law of the operating location.

9 Troubleshooting

The balance should be switched off for a short time following an interruption in the programme sequence and disconnected from the mains supply. It is then necessary to repeat the weighing process from the beginning.

Help:

Interruption	***Possible cause***
Weight display is not illuminated.	• *The balance is not switched on.* • *The batteries are wrongly inserted, the batteries are empty* • *No batteries are attached* • *The mains supply connection has been interrupted (mains cable not plugged in/faulty).* • *Power supply interrupted. .*
The weight display changes continually	• *Draught/air movement* • *Table/floor vibrations* • *The weighing plate is in contact with foreign matter.* • *Electromagnetic fields / static charging (choose different location/switch off interfering device if possible)*
The weighing result is obviously incorrect	• *The balance display is not set to zero* • *Adjustment is no longer correct.* • *Great fluctuations in temperature.* • *Electromagnetic fields / static charging (choose different location/switch off interfering device if possible)*

Switch the balance off if other error messages should appear and then switch on again. Contact the manufacturer if the error message does not disappear.